

CLAIMS

What Is Claimed Is:

1. A method of cleaning a metal etch chamber during a dechuck process comprising:
 - placing into a chamber a substrate having a layer thereon of a metal material;
 - introducing a process gas comprising Cl_2 , BCl_3 , or CHF_3 , or mixtures thereof, into the chamber;
 - generating a plasma in the chamber to generate from the process gas, an etch gas that etches metal from the substrate; and
 - performing a dechuck process by introducing into the chamber an oxygen-containing gas.
2. The process of claim 1 wherein the oxygen-containing gas reacts with polymers produced by the etching process to produce an exhaust product.
3. The process of claim 1 wherein the oxygen-containing gas is O_2 , O_3 , NO or NO_2 , or mixtures thereof.
4. The process of claim 1 wherein the oxygen-containing gas comprises essentially O_2 .
5. A method of cleaning polymer residue from an etching chamber during etching of a substrate in the chamber, wherein said substrate comprises a metal-containing layer thereon, and the polymer residue is formed on surfaces in the chamber, the method comprising the steps of:
 - placing the substrate in the chamber;
 - in a first stage, providing an etchant gas in the chamber comprising Cl_2 , BCl_3 , and CHF_3 , or mixtures thereof; and
 - in a second stage, providing a dechucking gas in the chamber comprising O_2 , O_3 , NO or NO_2 , or mixtures thereof.

6. The method of claim 5, wherein the dechucking gas consists essentially of O₂.

7. The method of claim 5, wherein said metal-containing layer comprises Aluminum.

8. A method of cleaning etchant debris in a chamber containing a substrate secured to an electrostatic chuck comprising:
subsequent to or concurrent with a metal-etching process performed on said substrate, introducing a cleaning gas into said chamber, wherein said cleaning gas comprises an oxygen-containing gas.

9. The method of claim 8 wherein introducing said cleaning gas serves to remove residual charge in said chamber thereby assisting with dechucking said substrate from the electrostatic chuck.

10. The method of claim 8 wherein the chamber pressure is maintained at from about 1 mTorr to about 100 mTorr.

11. The method of claim 8 wherein the chamber pressure is maintained at from about 1 mTorr to about 15 mTorr.

12. The method of claim 8 wherein the chamber pressure is maintained at about 5 mTorr.

13. The method of claim 8 wherein said cleaning gas is in a plasma sustained at a source power from about 200 Watts to about 1300 Watts.

14. The method of claim 8 wherein said cleaning gas is in a plasma sustained at a source power of about 900 Watts.

15. The method of claim 8 wherein said cleaning gas comprises 100 sccm of O₂.

16. The process of claim 1, wherein said process gas comprises Cl₂, BCl₃, and CHF₃.